

CLAIMS

1. A fuel cell disassembly method of disassembling a fuel cell, the fuel cell comprising: an electrode assembly having
5 an electrolyte interposed between a pair of electrodes; sealing layers located to surround periphery of the electrode assembly; and a pair of separators arranged across the electrode assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has a fuel gas
10 conduit, while the other of the separators facing the other of the electrodes has an oxidizing gas conduit,

said fuel cell disassembly method comprising the step of:

providing a fluid supply for disassembly of the fuel cell
15 to facilitate disassembly of the fuel cell.

2. A fuel cell disassembly method in accordance with claim 1, wherein the fluid supply for disassembly of the fuel cell is different from a fluid supply provided for power generation of the fuel cell.

20 3. A fuel cell disassembly method in accordance with claim 1, wherein the fluid supply for disassembly of the fuel cell is carried out to supply a fluid to at least one of the fuel gas conduit and the oxidizing gas conduit.

4. A fuel cell disassembly method in accordance with
25 claim 1, wherein the fluid supply for disassembly of the fuel cell supplies a fluid to heighten an in-passage pressure of

at least one of the fuel gas conduit and the oxidizing gas conduit over a level of in-passage pressure in the fluid supply for power generation of the fuel cell.

5 5. A fuel cell disassembly method in accordance with claim 1, wherein the separator is kept pressing or surrounded during the fluid supply for disassembly of the fuel cell.

6. A fuel cell disassembly method in accordance with claim 1, wherein the fluid supply for disassembly of the fuel cell supplies a different type of a fluid from a type of a fluid
10 supplied for power generation of the fuel cell.

7. A fuel cell disassembly method in accordance with claim 6, wherein the different type of the fluid has a function of lowering either an adhesion force between the sealing layers and the electrode assembly or an adhesion force between the
15 sealing layers and the separators.

8. A fuel cell disassembly method in accordance with claim 1, wherein the fluid supply for power generation of the fuel cell supplies a gas, and the fluid supply for disassembly of the fuel cell supplies either water or an organic solvent.

20 9. A fuel cell disassembly method in accordance with claim 1, wherein the fluid supply for disassembly of the fuel cell supplies a fluid having a higher temperature than a temperature of a fluid supplied for power generation of the fuel cell,

25 10. A fuel cell disassembly method in accordance with claim 1, wherein an external force is additionally applied in

directions of parting the pair of separators from each other during the fluid supply for disassembly of the fuel cell.

11. A fuel cell disassembly method in accordance with claim 1, said fuel cell disassembly method further comprising
5 the step of:

weakening a pressing force applied in a direction of making the pair of separators approach to each other during power generation of the fuel cell, prior to said step of providing the fluid supply for disassembly of the fuel cell.

10 12. A fuel cell disassembly method in accordance with claim 11, wherein said fluid supply providing step provides the fluid supply to facilitate disassembly of either a fuel cell stack or a fuel cell module, which is a layered body of plurality of the fuel cells.

15 13. A fuel cell disassembly method that disassembles a layered body of multiple fuel cells having a coolant sealing layer, which prevents leakage of a coolant from a coolant conduit formed either between adhesion faces of each pair of adjoining fuel cells or between adhesion faces of each fuel
20 cell and each coolant conduit separator,

said fuel cell disassembly method comprising the steps of:

providing a fluid supply prior to disassembly of the fuel cells of the layered body to the coolant conduit to remove at
25 least part of the coolant from a space between the adhesion faces of each pair of adjoining fuel cells or from a space

between the adhesion forces of each fuel cell and each coolant conduit separator; and

providing a fluid supply for disassembly of the fuel cells of the layered body to at least either of a fuel gas
5 conduit and an oxidizing gas conduit in the layered body of the fuel cells to facilitate disassembly of at least part of the fuel cells of the layered body.

14. A fuel cell disassembly method that disassembles a layered body of multiple fuel cells having a coolant sealing
10 layer, which prevents leakage of a coolant from a coolant conduit formed either between adhesion faces of each pair of adjoining fuel cells or between adhesion faces of each fuel cell and each coolant conduit separator,

said fuel cell disassembly method comprising the step
15 of:

providing a fluid supply for disassembly of the fuel cells of the layered body to the coolant conduit to remove at least part of the coolant from a space between the adhesion faces of each pair of adjoining fuel cells or from a space
20 between the adhesion forces of each fuel cell and each coolant conduit separator.

15. A fuel cell that generates electric power through reaction of a fuel gas with an oxidizing gas, said fuel cell comprising:

25 an electrode assembly having an electrolyte interposed between a pair of electrodes;

sealing layers located to surround periphery of the electrode assembly; and

a pair of separators arranged across the electrode assembly and bonded to the sealing layers, where one of the
5 separators facing one of the electrodes has a fuel gas conduit, while the other of the separators facing the other of the electrodes has an oxidizing gas conduit,

wherein at least either boundaries between the sealing layers and the separators or boundaries between the sealing
10 layers and the electrode assembly are made of a functional material having an adhesion force that is lowered by a fluid supply for disassembly of said fuel cell, which is different from a fluid supply for power generation of said fuel cell, to supply a fluid to at least one of the fuel gas conduit and
15 the oxidizing gas conduit.

16. A fuel cell in accordance with claim 15, wherein the functional material has a characteristic of lowering the adhesion force in a preset high temperature range.

17. A fuel cell in accordance with claim 15, wherein the
20 functional material has a characteristic of lowering the adhesion force, when being exposed to hot water.

18. A fuel cell in accordance with claim 15, wherein the functional material has a characteristic of lowering the adhesion force, when being exposed to either of an organic
25 solvent or a release agent.

19. A fuel cell in accordance with claim 15, wherein the

sealing layers are made of the functional material.

20. A fuel cell that generates electric power through reaction of a fuel gas with an oxidizing gas, said fuel cell comprising:

5 an electrode assembly having an electrolyte interposed between a pair of electrodes;

 sealing layers located to surround periphery of the electrode assembly;

 a pair of separators arranged across the electrode
10 assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has a fuel gas conduit, while the other of the separators facing the other of the electrodes has an oxidizing gas conduit; and

 a breaking guide that is formed in each of the separators
15 to function as a starting point of breakage of the separator triggered by a fluid supply for disassembly of said fuel cell to supply a fluid to at least one of the fuel gas conduit and the oxidizing gas conduit.

 21. A fuel cell in accordance with claim 20, wherein the
20 breaking guide is formed in each of the separators to function as a starting point of breakage of the separator triggered by the fluid supply for disassembly of said fuel cell, which is different from a fluid supply for power generation of said fuel cell, to supply a fluid to at least one of the fuel gas conduit
25 and the oxidizing gas conduit.

 22. A fuel cell in accordance with claim 20, wherein the

fluid supply for disassembly of the fuel cell supplies either water or an organic solvent.